Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

Claims 1-20 (canceled).

21. (previously presented) A rewritable phase-change optical recording medium, said recording medium essentially consisting of Ag, In, Sb and Te, and being initialized at least by irradiating said recording medium with a scanning beam spot emitted from a high power semiconductor laser device, wherein an energy density input by said beam spot is in a range of 600 J/m^2 to 1000 J/m^2.

Claims 22-23 (canceled).

24. (previously presented) A rewritable phase-change optical recording medium as claimed in claim 21,

wherein a scanning speed of said beam spot is in a range of 3.5 m/sec to 6.5 m/sec.

Claims 25-26 (canceled).

27. (previously presented) A rewritable phase-change optical recording medium as claimed in claim 21,

wherein an intensity of the emission from said semiconductor laser device is equal to, or

greater than, 330 mW.

Claims 28-29 (canceled).

30. (previously presented) A rewritable phase-change optical recording medium as claimed in claim 21,

wherein a width of an overlapped portion, which is formed as an overlap of irradiated portions of two neighboring irradiation tracks on said recording medium during two consecutive rotations of said recording medium in initializing steps, is equal to, or less than, 0.5 Wr, where Wr is a width at half maximum of a spatial laser power distribution in a direction perpendicular to a beam scanning direction.

Claims 31-43 (canceled).

44. (previously presented) A phase-change optical recording medium comprising a recording layer, wherein said recording layer contains information recorded in advance therein corresponding to S and R values for selecting an optimum recording power, said S and R values being specified by a method comprising the steps of:

writing a series of information data, as test recording runs, with recording power of laser beam consecutively varied in a range of 15 mW to 18 mW to thereby generate a recorded pattern including low and high reflective portions;

reading out signals from said low and high reflective portions on said recording medium to obtain recorded signal amplitude, m, corresponding to said recording power, P;

calculating a normalized gradient, g(P), using an equation,

$$g(P)= (m/\Delta m)/(P/\Delta P),$$

where ΔP is an infinitesimal change in the vicinity of P, and Δm is an infinitesimal change in the vicinity of m;

determining an optimum recording power, after judging adequacy of the magnitude of said recording power based on thus calculated normalized gradient, g(P);

selecting a specific number, S, from the numbers in the range of 0.2 to 2.0 based on said calculated normalized gradient, g(P);

obtaining a value of said recording power, Ps, which coincide with said specific number, S, presently selected;

selecting a specific number, R, based on the obtained recording power, Ps, from the numbers in the range of 1.0 to 1.7,

wherein said recording power, Ps, is multiplied by said specific number, R, to obtain an optimum recording power value, P_0.

45. (original) The phase-change optical recording medium according to claim 44, wherein $1.2 \leq S \leq 1.4$, and $1.1 \leq R \leq 1.3$.

46. (original) The phase-change optical recording medium according to claim 44, wherein said recording medium is recordable at a recording velocity ranging from 4.8 m/sec to 14.0 m/sec.

47. (previously presented) A phase-change optical recording medium comprising a

recording layer, wherein said recording layer contains information regarding a P_t value recorded in advance therein, said P_t value corresponding to an optimum recording power, P_0, specified by a method comprising the steps of:

writing a series of information data, as test recording runs, with recording power of laser beam consecutively varied in a range of 15 mW to 18 mW to thereby generate a recorded pattern including low and high reflective portions;

reading out signals from said low and high reflective portions on said recording medium to obtain recorded signal amplitude, m, corresponding to said recording power, P;

calculating a normalized gradient, g(P), using an equation,

$g(P)= (m/\Delta m)/(P/\Delta P)$,

where ΔP is an infinitesimal change in the vicinity of P, and Δm is an infinitesimal change in the vicinity of m;

determining an optimum recording power, after judging adequacy of the magnitude of said recording power based on thus calculated normalized gradient, g(P);

selecting a specific number, S, from the numbers in the range of 0.2 to 2.0 based on said calculated normalized gradient, g(P);

obtaining a value of said recording power, Ps, which coincide with said specific number, S, presently selected;

selecting a specific number, R, based on the obtained recording power, Ps, from the numbers in the range of 1.0 to 1.7; and

multiplying said recording power, Ps, by said specific number, R, to obtain ~~an~~ said P_t value corresponding to said optimum recording power, P_0.

48. (original) The phase-change optical recording medium according to claim 47, wherein said recording medium is recordable at a recording velocity ranging from 4.8 m/sec to 14.0 m/sec.

49. (previously presented) A rewritable phase-change optical recording medium as claimed in claim 21, wherein a 3T land jitter of the initialized optical recording medium after 1000 cycles of direct overwrite is equal to or below 35 nsec.

50. (previously presented) A rewritable phase-change optical recording medium as claimed in claim 21, wherein a 3T land jitter of the initialized optical recording medium is equal to or below 35 nsec.

51. (currently amended) An optical recording medium comprising <u>a substrate and</u> a recording layer containing at least materials capable of carrying out read/write/erase operations through phase changes of said materials therein,

wherein said recording layer essentially consists of Ag, In, Sb, Te and Ge, with a proportion in atomic percent of a(Ag): b(In): c(Sb): d(Te): e(Ge), with $0.1 \le a \le 7$, $2 \le b \le 10$, $64 \le c \le 92$, $5 \le d \le 26$ and $0.3 \le e \le 3$, provided that $a + b + c + d + e \ge 97$.

52. (previously presented) The optical recording medium according to claim 51, wherein said recording layer has a composition satisfying a relation of $88 \le c + d \le 98$.

53. (previously presented) The optical recording medium of claim 51, further comprising

a substrate, and contiguous layers formed on said substrate in order as follows, a first dielectric layer, the recording layer, a second dielectric layer, a metal/alloy layer, and an ultraviolet light curing resinous layer.

54. (previously presented) The optical recording medium according to claim 53,

wherein said first dielectric layer, recording layer, second dielectric layer and metal/alloy layer are each formed having a thickness ranging from 30 nm to 220 nm, 10 nm to 25 nm, 10 nm to 50 nm, and 70 nm to 250 nm, respectively.

55. (previously presented) The optical recording medium according to claim 54,

wherein said metal layer essentially consists of Al and at least one kind of additive with a content ranging from 0.3 weight percent to 2.5 weight percent, said additive being selected from the group consisting of Ta, Ti, Cr and Si.

56. (previously presented) The optical recording medium according to claim 54,

wherein said metal/alloy layer essentially consists of Ag and at least one kind of additive with a content ranging from 0 to 4 weight percent, said additive being selected from the group consisting of Au, Pt, Pd, Ru, Ti and Cu.

57. (previously presented) The optical recording medium according to claim 53,

wherein said recording medium is rewritable at least once at a linear recording velocity ranging from 9 m/sec to 30 m/sec.